

THE UNIVERSITY OF TEXAS AT AUSTIN

Date: 09/04/2014

RECOMMENDATION FOR CHANGE IN ACADEMIC RANK/STATUS

Name: Cox, Brady R. EID: brcox Present Rank: Assistant Professor

Years of Academic Service (*Include AY 2014-15 in each count*):

At UT Austin since: 09/01/2012 In Present Rank: 3.00 In Probationary Status (TT only): 3
(month/day/year) (# of years) (# of full years or N/A)

Primary Department: Civil, Architectural, and Environmental Engineering College/School: Cockrell School of Engineering

Joint Department: College/School:

Other Department(s):

Recommendation actions¹:

By Budget Council/Executive Committee: Promote

Vote² for promotion 23; Against 0; Abstain 1; Absent 3; Ineligible to vote 0

By Department Chair: Promote

Vote for promotion ; Against ; Abstain ; Absent ;

By College/School Advisory Committee: Promote

Vote for promotion 7; Against 0; Abstain 0; Absent 0

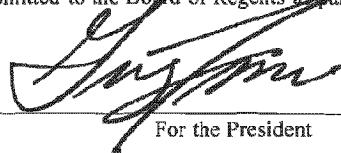
By Dean: Promote

Administrative Action: Promote to Associate Professor

Date Action Effective: September 1, 2015

(To be submitted to the Board of Regents as part of the annual budget.)

By:

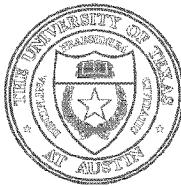


For the President

Date: December 17, 2014

¹ See "Chart of Recommended Actions" for eligible recommended actions applicable to specific conditions and administrative levels.

² Record all votes for and against promotion, abstentions by eligible voting members, and the number of absent eligible voting members. The number of budget council/executive committee members ineligible to vote due to rank should also be recorded. Enter zero where it would otherwise be blank.



THE UNIVERSITY OF TEXAS AT AUSTIN
COCKRELL SCHOOL OF ENGINEERING

Office of the Dean • 301 E. Dean Keeton Street, C 2100 • Austin, Texas 78712-2100

Dean's Assessment

Brady R. Cox

Civil, Architectural, and Environmental Engineering

Dr. Brady Cox earned his BS in Civil Engineering in 2000 and his MS in Civil Engineering in 2001, both at Utah State University. He received his PhD in Civil Engineering at the University of Texas at Austin in 2006. Dr. Kenneth H. Stokoe II was his PhD advisor. Dr. Cox started his academic career as an assistant professor at the University of Arkansas in 2006. He was considered for promotion at the University of Arkansas during the 2011-12 academic year and would have been appointed as an associate professor in September 2012 had he not joined the faculty at the University of Texas at Austin. If successfully promoted to associate professor, Dr. Cox will have been in the rank of assistant professor for three years at the University of Texas at Austin. Technically, this case is early, but Dr. Cox will have served a total of nine years in rank, including his six years at the University of Arkansas.

Ten external letters were received with five reviewers selected by the budget council and five reviewers recommended by the candidate. No invitations to be a reviewer were declined or ignored. The letter writers were predominately from US universities, including the University of California at Berkeley, Rensselaer Polytechnic Institute, Georgia Tech, the University of Illinois at Urbana-Champaign, the University of Washington, the University of Michigan, and Brigham Young University. Letters were also received from the University of Auckland, the US Army Corps of Engineers, and ISTerre Grenoble. The reviewers are renowned in the field of geotechnical engineering, and three are members of the National Academy of Engineering.

Teaching

Dr. Cox has taught distinct courses in the two years in rank as an assistant professor at the University of Texas. He has taught two, required undergraduate courses: CE 311K, *Introduction to Computer Methods* (one time), and CE 357, *Geotechnical Engineering* (two times). He also taught two graduate courses, CE 387R.2, *Soil and Rock Dynamics* (one time), and CE 397, *Underground Openings* (one time).

Across all his courses, Dr. Cox's instructor ratings range from 4.0 to 4.7 with an average of 4.4. His course ratings range from 3.1 to 4.2 with an average of 3.8. His instructor ratings are above average as compared with faculty within the Cockrell School of Engineering. The somewhat low average course rating is partly due to a low rating in CE 397. This course is outside Dr. Cox's primary area of expertise, and he agreed to develop a new course to expand the diversity of graduate course offerings in geotechnical engineering. The students appreciated the technical topics addressed in the course, but expressed concerns that the course was not well organized. They also felt that the inclusion of multiple guest lecturers exacerbated organizational issues. However, based on his record in other courses at the University of Texas and the University of Arkansas, CE 397 is not considered to be representative of his dedication to teaching.

Student comments in the other courses indicate that Dr. Cox's teaching has been well-received. The peer-evaluation reports provided by the department are consistent and indicate the effectiveness of the candidate in engaging the students.

Research

Dr. Cox's research focuses on geotechnical earthquake engineering. He conducts non-intrusive experiments in the field to characterize the properties of soil and rock below the surface. He frequently travels to the sites of major earthquakes around the world to collect perishable data, develop subsurface profiles, and assess liquefiable

soils. Recently, he has made considerable progress in quantifying uncertainty associated with surface wave methods for subsurface imaging.

While in rank at the University of Texas, Dr. Cox has produced five peer-reviewed journal papers¹ and three conference proceedings. As a basis of comparison, twelve assistant professors in the Department of Civil, Architectural and Environmental Engineering were successfully promoted in the past ten years. The average number of journal papers published in rank was 2.6/year and the median was 2.2/year. Dr. Cox's record at UT is consistent with these expectations.

As an assistant professor, he has 22 peer-reviewed journal papers (33 career total) and 26 conference proceedings (33 career total). His publications are included in journals such as the *Journal of Geotechnical and Geoenvironmental Engineering*, *Earthquake Spectra*, and *ASTM Geotechnical Testing Journal*. The primary contributors to his publications are his graduate students and collaborators at other universities. In particular, Cox participated in field studies following earthquakes in Hawaii (2006), Haiti (2010), New Zealand (2010 and 2011), and Japan (2011). Papers documenting these investigations, and the subsequent data analyses, represent 14 of his journal papers in rank.

While in rank as an assistant professor at the University of Texas at Austin, Dr. Cox has received \$0.62 million (\$3.7 million total as an assistant professor) in research funding with \$0.41 million (\$1.9 million total as an assistant professor) being his share. He has had a total of 16 funded research projects, with three since he arrived at the University of Texas. Dr. Cox was the PI on eight (50%) of these projects. Funding agencies include the National Science Foundation, United Nations Development Programme, U.S. Department of Homeland Security, and the Arkansas State Highway and Transportation Department. Of note, Dr. Cox received a National Science Foundation CAREER/PECASE grant in 2011.

The review letters for Dr. Cox were outstanding. They identified his contributions to the field and highlighted him as having outstanding potential. For instance:

Dr. Pierre-Yves Bard (ISTerre Grenoble) states, "My personal feeling is thus that Dr B. Cox has already made significant contributions to geotechnical earthquake engineering either by developing (or contributing to develop) innovative technologies or by mastering enough a wide variety of geophysical tools to put them together in an optimal way for a broad variety of applications, and to issue very welcome warnings on the limitations of some of the presently used tools or engineering practice."

Dr. Jonathan D. Bray (University of California Berkeley) states, "Dr. Cox has already made several significant contributions to the field of earthquake engineering, and he possesses outstanding potential for making future contributions to our profession."

Dr. Ricardo Dobry (Rensselaer Polytechnic Institute, NAE) states, "The impact of his work - especially in the area of noninvasive measurement of relevant ground properties using portable instruments that can be deployed shortly after an earthquake - is really quite incredible considering his youth, and he is poised to make even greater innovative contributions in the near future."

Dr. Steven Kramer (University of Washington) states, "He is certainly the top untenured geotechnical engineering faculty member in the country, and probably one of the top few that have not yet been promoted to full Professor."

¹ The department chair and budget council statements refer to six journal papers in rank at UT, but Cox, Wood, and Hazirbaba (2012) was submitted for review in February 2011, while Dr. Cox was as assistant professor at the University of Arkansas. Dr. Cox attributes this work to the University of Arkansas in his description of co-authored works.

Only one letter, from Dr. David Frost at Georgia Tech, raised concerns with Dr. Cox's record. Dr. Frost noted that Dr. Cox's publication record was "somewhat variable" because 50% of Dr. Cox's journal papers as a faculty member (both Texas and Arkansas) were published in 2011 and that Dr. Cox published extensively with his first PhD graduate (Clint Wood), but had not written journal papers with other graduate students². Dr. Frost noted that the concentration of publications in 2011 may be a result of delays in publications resulting from reconnaissance efforts in Haiti. Dr. Frost recommended that Dr. Cox develop "a more consistent and stable research portfolio³," which would permit him to "effectively mentor graduate students through all aspects of the research enterprise." Overall, Dr. Cox's letter was positive and he concluded by stating "...I believe that Dr. Cox has developed the necessary dossier to deserve promotion to the rank of Associate Professor with tenure."

Advising and Student Mentoring

Dr. Cox has been active in advising both graduate and undergraduate students. He has graduated one PhD student at the University of Texas who followed him during his transition from University of Arkansas. He is currently supervising four additional PhD students. Dr. Cox has also graduated one MS student at the University of Texas at Austin and six MS students from the University of Arkansas. With regard to undergraduate students, Dr. Cox has mentored three undergraduate students in research while in rank at the University of Texas at Austin. Dr. Cox has placed one PhD graduate as an assistant professor at the University of Arkansas.

University Service

Since his arrival in 2012, Dr. Cox has been a member of two departmental committees: Curriculum Committee and the Distinguished Lecture Series Committee. While at University of Arkansas, Dr. Cox was a member of the Graduate Student Committee, the Scholarship Committee, and Facilities and Grounds Committee.

Professional Service

Dr. Cox has extensive public service. He is an Associate Editor for *ASCE Journal of Geotechnical and Geoenvironmental Engineering*. He is a member of four professional committees: NEES Data and Curation Subcommittee, ASTM Committee D18 on Soil and Rock, ASCE Geo-Institute Earthquake Engineering and Soil Dynamics Committee, and ASCE Geo-Institute Geophysical Engineering Committee.

Other Evidence of Merit or Recognition

Dr. Cox received the Network for Earthquake Engineering Simulation (NEES) Outstanding Contributor Award for the most influential research report in geotechnical engineering in 2014, the Presidential Early Career Award for Scientists Engineers (PECASE) in 2012, and the 2010 Hogentogler Award from the American Society of Testing and Materials for a "paper of outstanding merit" in the *ASTM Geotechnical Testing Journal*. The PECASE award is a truly outstanding distinction, given to only the top career award winners from various agencies. Dr. Cox was sponsored by NSF for the PECASE. Approximately 100 junior faculty receive the PECASE in the entire country in a year. Dr. Cox is also an Associate Editor for *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, which shows recognition in his research field.

Overall Assessment

Dr. Cox has a strong research portfolio with grants from a variety of funding sources and a suitable number of publications for an assistant professor. He has graduated one PhD student and seven MS students. He currently is supervising four PhD students. Dr. Cox has demonstrated a strong teaching record and a willingness to develop new courses to enhance the educational opportunities for the graduate students. His professional service is

² Dr. Frost also refers to one publication with "an MS student at his former institution" in his letter; however, Dr. Cox has not published journal papers with other graduate students in his group. The confusion arose because Dr. Cox's CV contains a typo related to Cox, Wood, and Hazirbaba (2012). Dr. Hazirbaba's name is underlined indicating that he was one of Dr. Cox's graduate students, but he was a faculty member at the University of Alaska Fairbanks at the time that the research documented in this paper was conducted.

³ In this case, "stability" refers to research funding that is not tied to earthquake reconnaissance.

outstanding. He is a recipient of the PECASE award, and the quality of his research has been recognized by ASTM and NEES.

Whenever we hire a faculty member who received his/her PhD from the University of Texas at Austin, I believe that extra scrutiny is required to ensure that the faculty member has developed a research program that is distinct from that of their advisor. At first glance, this is not clear with Dr. Cox because his PhD advisor (Dr. Stokoe) is the PI for two of the three research grants that he received at UT. In addition, several of the external referees refer to Dr. Stokoe in their letters. This issue is not addressed by the Budget Council or the department chair, but I was the department chair when Dr. Cox was hired and I am quite familiar with his area of research. I am confident that Dr. Cox has developed an independent and sustainable research program.

I can highlight two distinct areas where Dr. Cox has extended his research beyond that of Dr. Stokoe:

- Dr. Stokoe uses large geotechnical shakers (vibroseis) to generate surface waves for shear wave velocity profiling. Dr. Cox has also used this equipment extensively, but as part of his CAREER award, he has developed techniques to obtain deeper profiles using passive wavefields. This is a significant development and holds great potential for the future.
- Also as part of his CAREER award, Dr. Cox is using probabilistic methods to quantify the uncertainty associated with surface wave testing. As noted in the Budget Council statement, Dr. Cox organized a session at the 2014 ASCE Geo-Congress and demonstrated convincingly the variability of analyses of a common set of surface wave data. His results were “eye-opening.”

I agree with the external reviewers that Dr. Cox is at the forefront of geotechnical earthquake engineering. Dr. Frost is correct that Dr. Cox's extensive involvement in earthquake reconnaissance studies has limited his production of journal papers with his own students, but Dr. Cox has established an independent reputation by working with leaders in geotechnical engineering at top universities in the US and abroad.

I believe that Dr. Cox exceeds all expectations for promotion to associate professor, and support this case without reservation.



Sharon L. Wood, Dean
1 November 2014

Statistical Summary for “In Rank”
Brady R. Cox

Metric	Value
Peer-Reviewed Journal Publications in Rank	22
Peer Reviewed Conference Proceedings Publications in Rank	33
Total Citations of all Publications (career)*	234
h-index (career)*	9
Google Scholar Total Citations of all Publications (career)	274
Google Scholar h-index (career)	9
Research Funding Raised (total share)	\$3,757,677
Research Funding Raised (candidate share)	\$1,919,183
Total Grants/Contracts Received	16
PI on Grants/Contracts Received	8
PhD Students Completed (count 1 if sole advisor, 0.5 if co-advised)	1
MS Students Completed (count 1 if sole advisor, 0.5 if co-advised)	7
PhD Students in Pipeline (as of 09/2014)	4
MS Students in Pipeline (as of 09/2014)	0
Number of Courses Taught	UT = 4 UA = 6
Number of Students Taught	UT = 150 UA = 384
Average Instructor Evaluation UG	UT = 4.5 UA = 4.3
Average Instructor Evaluation Grad	UT = 4.3 UA = 4.5
Average Course Evaluation UG	UT = 3.9 UA = NA
Average Course Evaluation Grad	UT = 3.8 UA = NA
Number of Teaching Awards	0
Student Organizations Advised	0
Undergraduates Supervised	3 - NSF REU Students
Journal Editorial Boards	1
Symposia Organized	2

* Source: Publish or Perish Software on May 29, 2014

2. TEACHING

Budget Council Statement

Prepared by Robert B. Gilbert



Evaluation of Dr. Cox's teaching was based on a review of his instructor surveys, peer reviews of his teaching, and a review of his teaching portfolio.

In his two years in rank as an Assistant Professor at The University of Texas at Austin, Dr. Cox has taught four different courses: two undergraduate courses and two graduate courses:

CE 357 Geotechnical Engineering. This undergraduate course is required of all students in Civil Engineering and Architectural Engineering and is normally taken in the junior year. This course represents the first exposure of students to soil as an engineering material and it is also a prerequisite for the two additional undergraduate courses in Geotechnical Engineering. Because this course is the only required geotechnical course, it is important for exposing new students to the field of geotechnical engineering.

CE 311K – Introduction to Computer Methods. This undergraduate course is required for all students in Civil Engineering and Architectural Engineering and is normally taken in the sophomore year. It is a core course that focuses on problem solving, numerical methods and computer programming.

CE 387R.2 – Soil and Rock Dynamics. This graduate course is an elective course taken by about half of the graduate students in geotechnical engineering. The course covers the basic theory and practice of soil and rock dynamics as applied to material characterization, earthquake engineering and foundation design for blasts and vibrations.

CE 397 – Underground Openings. This graduate course is an elective course that Dr. Cox developed and offered for the first time last fall. The course covers the theory and practice of designing and constructing underground openings including tunnels, shafts and galleries.

Over his two years here, Dr. Cox has taught three undergraduate classes, CE 357 twice and CE 311K once, and two graduate classes, CE 387R.2 once and CE 397 once. His teaching load is consistent with expectations within the Department and is similar to other faculty in our group. However, he has distinguished himself with his willingness to teach new courses (he had never taught courses similar to CE 311K and CE 397) and to develop a new graduate course (CE 397). Therefore, Dr. Cox has gone well beyond the expectations for a new faculty member.

Dr. Cox has performed very well as a teacher at The University of Texas at Austin. His instructor ratings are all greater than or equal to 4.0, and his average instructor ratings for undergraduate courses (4.5) and for graduate courses (4.2) both exceed the average instructor ratings for Assistant Professors in the Department and in the School of Engineering. In CE 357, his average instructor rating (4.4 in two offerings) exceeds the average for the professors who taught the course over the past three years (4.3 in ten offerings). In CE 311K, his instructor rating (4.7) exceeds significantly the average instructor rating for other professors teaching that course over the past three years (3.9 in thirteen offerings). His course ratings clearly reflect teaching new courses for the first time. His course rating increased from 3.5 the first time he taught CE 357 to

Brady Cox

Department of Civil, Architectural
and Environmental Engineering

4.0 the second time he taught it. In the most recent semester, he received instructor ratings of 4.5 and 4.7 in his two undergraduate courses. His lowest course rating was for the new graduate course he developed (CE 397); we expect that this rating will improve significantly as he gets experience. A student from that class concluded, "Dr. Cox is a great professor, and did an excellent job with the course despite it being very unorganized. I am confident this will be a useful course, especially now that Dr. Cox has a feel for how to approach the material." Dr. Cox's performance here is consistent with his earlier performance in six years as an Assistant Professor at the University of Arkansas.

The peer evaluations for Dr. Cox are very positive and consistent with his student evaluations. One concludes "Based on Brady's personality and his teaching style, I expect he will be one of the best teachers in our department." The other concludes "We are fortunate to have him teaching undergraduate students in CAEE."

Dr. Cox's teaching portfolio is consistent with a trajectory toward excellence as a teacher. He creates homework and exam problems that challenge the students and give them opportunities to synthesize their understanding. He emphasizes the practical nature of civil engineering.

While in rank at The University of Texas at Austin, one Ph.D. student and one M.S. student have graduated under Dr. Cox's supervision. Previously at the University of Arkansas, Dr. Cox graduated six M.S. students.

We fully expect that Dr. Cox will become one of the top teachers in our department.

Brady Cox

Department of Civil, Architectural
and Environmental Engineering

3. Research, Publications & Other Evidence of Scholarship/Creativity

Cox, Brady R.

Research, Publications & Other Scholarship Summary Tables**Table 1. Research Summary**

Metric	Value
Peer-Reviewed Journal Publications in Rank	22
Peer Reviewed Conference Proceedings Publications in Rank	33
Total Citations of all Publications (career)*	234
h-index (career)*	9
Google Scholar Total Citations of all Publications (career)	274
Google Scholar h-index (career)	9
Research Funding Raised (total share)	\$3,757,677
Research Funding Raised (candidate share)	\$1,919,183
Total Grants/Contracts Received	16
PI on Grants/Contracts Received	8

* Source: Publish or Perish Software on May 29, 2014

Table 2. Grants and Contracts Awarded While in Rank

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
None	CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses - from Deterministic and Incoherent to Probabilistic and Standardized (DIPS)	The National Science Foundation (NSF)	\$421,600	\$421,600	July 2011 – June 2016
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	The National Science Foundation (NSF)	\$197,966	\$98,983	June 2013 - May 2015
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	Tonkin and Taylor Ltd.	\$223,518	\$111,759	June 2013 - May 2015
None	RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods	The National Science Foundation (NSF)	\$197,684	\$197,684	Dec. 2012 - Nov. 2014

continued below

3. Research, Publications & Other Evidence of Scholarship/Creativity

Cox, Brady R.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
A. Rodriguez- Marek (PI), D. Assimaki, M. Pando, W. Silva, J. Wartman	NEES-CR: Topographic Effects in Strong Ground Motion - From Physical and Numerical Modeling to Design	The National Science Foundation (NSF)	\$1,144,593	\$211,857	Oct. 2009 – Sept. 2013
None	Site-Specific Seismic Ground Motion Analyses for Transportation Infrastructure in the New Madrid Seismic Zone	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	\$88,592	\$88,592	July 2011 – June 2012
None	RAPID: CPT and SASW Testing at Seismograph Stations with Liquefiable Soils Affected by the Tohoku Earthquake, Japan	The National Science Foundation (NSF)	\$120,253	\$120,253	July 2011 – Dec. 2012
E. Rathje (PI), J. Bachhuber	Development of a Geologic and Geotechnical Database of Port-au-Prince Metropolitan Area for use in Seismic Microzonation Studies	United Nations Development Programme (UNDP)	\$50,000	\$16,667	Nov. 2010 – June 2011
S. Olson (PI)	RAPID: Geotechnical-Driven Damage Patterns and Liquefaction in the January 2010 Haiti Earthquake	The National Science Foundation (NSF)	\$40,000	\$20,000	May 2010 – April 2011
J. Cothren, A. Rodriguez- Marek, J. Wartman	Collaborative Research: The M8.0 Pisco Peru Earthquake – A Benchmark Ground Failure Event for Remote Sensing and Data Archiving	The National Science Foundation (NSF)	\$325,178	\$177,065	Aug. 2009 – Jan. 2011
None	Practical Recommendations for Evaluation and Mitigation of Soil Liquefaction in Arkansas	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	\$79,524	\$79,524	July 2009 – Dec. 2010

continued below

3. Research, Publications & Other Evidence of Scholarship/Creativity**Cox, Brady R.**

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
K. Hazirbaba (PI)	Utilization of Screw Piles in High Seismicity Areas of Cold and Warm Permafrost	Alaska University Transportation Center (AUTC)	\$190,424	\$33,242	July 2009 – June 2011
K. Grimmelmann (PI), E. Heymsfield	Structural Health Monitoring and Assessment of Critical Intermodal Transportation Infrastructure Elements	U.S. Department of Homeland Security (DHS)	\$225,000	\$75,000	Jan. 2009 – June 2011
N. Dennis (PI), J. McCartney	Resistance Factors for Pile Foundations	Arkansas State Highway and Transportation Department (AHTD)	\$105,817	\$35,272	Jan. 2009 – June 2010
J. McCartney	Evaluation of Basal Reinforcement of Flexible Pavements with Geosynthetics	Arkansas State Highway and Transportation Department (AHTD)	\$263,459	\$175,639	July 2008 – June 2011
J. McCartney	Accelerated Characterization of Full-Scale Reinforced Flexible Pavement Models using a Vibroseis	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	\$84,069	\$56,046	July 2008 – Dec. 2009
Total			\$3,757,677	\$1,919,183	